

Process for the preparation of L-amino acids by
fermentation and nucleotide sequences coding for the accDA
gene

5 Claims

1. Preferably recombinant DNA originating from
Corynebacterium which is capable of replication in
coryneform microorganisms and which at least contains
the nucleotide sequence coding for the accDA gene
shown in SEQ ID No. 1.
2. DNA capable of replication, as claimed in claim 1,
with:
 - (i) the nucleotide sequence shown in SEQ ID No. 1,
 - (ii) at least one sequence corresponding to the
sequence (i) within the region of degeneracy of
the genetic code, or
 - (iii) at least one sequence hybridizing with the
sequence complementary to the sequence (i) or
(ii), and optionally
 - (vi) [sic] neutral sense mutations in (i).
3. Protein amino acid sequence derived from the
nucleotide sequences as claimed in claim 1 or 2, shown
in SEQ ID No. 3.
4. Coryneform microorganisms, especially of the genus
Corynebacterium, transformed by the introduction of
one or more of the DNAs capable of replication as
claimed in claim 1 or 2.

5. Shuttle vector pZlaccDA with the restriction map shown in Fig. 1, deposited in *Corynebacterium glutamicum* under number DSM12785.

5 6. A process for the preparation of L-amino acids, especially L-lysine, by the fermentation of corynebacteria, wherein bacteria are used in which the accDA gene or nucleotide sequences coding therefor are amplified and, in particular, overexpressed.

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7. The process as claimed in claim 5 [sic], wherein bacteria are used in which other genes of the biosynthetic pathway of the desired L-amino acid are additionally amplified.

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8. The process as claimed in claim 5 [sic], wherein bacteria are used in which the metabolic pathways which reduce the formation of the desired L-amino acid are at least partially switched off.

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9. The process as claimed in claims 5 to 7 [sic], wherein a strain transformed [sic] plasmid vector is used and the plasmid vector carries the nucleotide sequence coding for the accDA gene.

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10. The process as claimed in claim 8 [sic], wherein bacteria transformed with plasmid vector pZlaccDA, deposited in *Corynebacterium glutamicum* under number DSM12785, are used.

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11. The process as claimed in one or more of the preceding claims, wherein corynebacteria are used which produce L-aspartic acid, L-asparagine, L-homoserine, L-threonine, L-isoleucine and L-methionine.

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12. The process as claimed in one or more of claims 5 to 10 [sic], wherein corynebacteria are used which produce L-lysine.
- 5 13. The process as claimed in one or more of claims 5 to 11 [sic], wherein the accBC gene is overexpressed in addition to the accDA gene.
14. The process as claimed in claim 5 [sic], wherein the dapA gene coding for dihydrodipicolinate synthase is simultaneously overexpressed.
- 10 15. The process as claimed in claim 5 [sic], wherein a DNA fragment conferring S-(2-aminoethyl)cysteine resistance is simultaneously amplified.
16. The process for the preparation of L-amino acids by fermentation as claimed in one or more of the preceding claims, wherein the following steps are carried out:
- 20 a) fermentation of the corynebacteria producing the desired L-amino acid, in which at least the accDA gene is amplified,
- b) enrichment of the desired L-amino acid in the medium or in the cells of the bacteria, and
- 25 c) isolation of the desired L-amino acid.